Wahl's NEW! G-Line Series Combustion Flue Gas Analyzers

G-Line 2000

For Industrial or Commercial use in systems above 239,000 BTU's (70kW)

...calculate combustion values for up to 10 fuels!

G-Line 2000

Compact Analyzer up to 2 Sensors!

O_2	Excess Air
CO_2	Differential Pressure
CO	T air T gas
NOx	Ambient CO Monitor
Efficiency	Gas Leak Detector

Wahl's NEW G-Line Series provides the latest technology in combustion flue gas analysis. Easily replaceable gas sensors are long life and low maintenance. Set audible buzzer alarms for selectable levels during gas measurement. Models available featuring full compliance with EPA Protocols CTM-030 and CTM-034.

The G-Line Series is designed for industrial or commercial use in systems above 239,000 BTU's (70kW). Detect Carbon Monoxide, Nitrous Oxide, and uncombusted hydrocarbons in the exhaust gas from a combustion process. Ensure employee safety and the efficiency of your equipment. Identify maintenance problems that develop over time, as boilers deteriorate and efficiency drops.

Compact and ergonomic units fit in your hand and feature easy to use keys and with a multi-line display. Magnetic rubber holster protects the unit from drops and allows convenient hands free operation. Built-in impact printer produces records that don't fade the way documents printed with thermal printers can. On board memory can hold 250 readings; expand memory capacity with optional flash. This instrument is particularly useful to users with processes using furnaces, engines, turbines, or boilers.

G-Line 4000

G-Line 4000

Hand-Held Analyzer up to 4 Sensors!

O_2	Excess Air
CO_2	Differential Pressure
CO	T air T gas
NO/NOx	V gas
SO_2	Ambient CO Monitor
Efficiency	Gas Leak Detector

G-Line Series Features

Easy replaceable gas sensors: uses long life low maintenance sensors. Alarm levels with audible buzzer on gases measurement. An external probe to locate the position of a gas leak. This probe has a flexible stainless steel shaft to reach difficult locations.

Standard Report of Calibration: Each instrument is factory calibrated and certified to ensure traceability, and shipped with a Report of Calibration.

Rechargeable battery operations: Rechargeable batteries provide longer field use. Flue gas analyzer and internal printer are powered by the same internal batteries. Charger is supplied standard.

Keyboard & Display: Text, menu, and keyboard available in most common languages (not icons) for simple and intuitive operations. Engineering units are selectable by keyboard. Large backlit multi-parameter LCD display.

Multi Fuel selection: Units provide up to 10 fuel profiles for calculating combustion values. Data for the most commonly used fuels is pre-loaded from factory. Other fuels can be added using GasConfig PC software.

Built-in impact printer: The instrument is available with an optional built-in rugged impact printer. It uses low cost, standard rolls of paper which are easy to read, heat resistant, and long lasting.

Pressure/Draft input: Differential pressure input to measure low pressure, draft, gas

CE ONE YEAR 1 WARRANTY

Complete Calibration Services Available

G-Line Series Features

pipework leak with pressure decay program, gas pressure, pressure in combustion chamber, and ΔP on filters and fan. Safety switch verification.

Smoke index: Smoke index measurement is performed by using the optional external hand pump. The results can be stored in the internal memory and printed on a report.

Gas sampling probe: Flue gas sampling probes with different lengths and shapes are available to match each specific requirement. Stores up to 250 samples. The sampling probe is connected to the instrument with a single or dual hose through a water trap and a suspended particle line filter.

Combustion air temperature sensor: A remote Pt100 probe is available for remote combustion air temperature measurement. This probe is strongly recommended for use in forced air boiler applications to obtain an accurate efficiency measurement.

Ambient CO Safety Monitoring: The instrument can operate in two ways: A procedure can be selected to monitor the CO and the O_2 in ambient air using the internal EC sensors. An internal program allows the CO max measurement in atmospheric boiler room test. An optional external probe is also available for continuous surveillance of the ambient air quality for operator safety. Both acoustic and visual alarm are available.

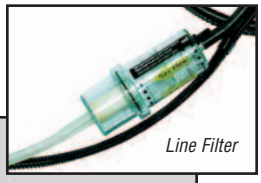
Gas leak sniffer: The instrument can operate in two ways: optional **external** probe is available to locate a gas leak. This probe has a flexible stainless steel shaft to reach difficult locations. An optional **internal** sensor can be installed inside the analyzer to locate a gas leak in the pipe network. The internal pump draws the ambient air and makes the instrument more sensitive to microleaks.

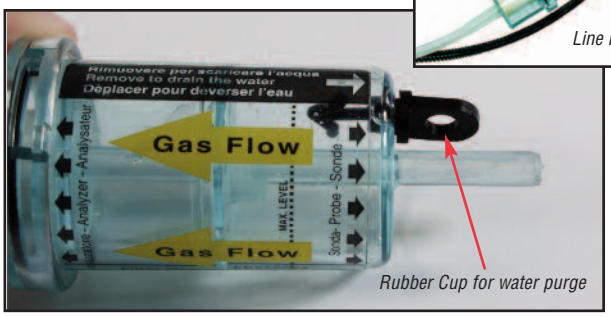
Ionization flame tester: Checks the ionization current in flame control sensors.

Flash memory: The flash memory allows the instrument to be configured by updating the firmware for any future requirement or product performance upgrading.

Industrial Probe & Compact Cooler unit: A special sampling probe is available for industrial high temperature applications. This probe can be used connected to an external gas conditioning unit. This compact unit cools and dries the gas sample. G-Line 4000: the cooling unit is strongly recommended for SO_2 and NO_2 long term measurements.

Patent Pending design trap: Built-in external protection for water suction, inhibits water from getting into the instrument, preventing risk of damage. Large water tank capacity for high condensing boiler. Small rubber cup for easy water purge. Long life paper filter.





G-Line 4000 Expanded Features:
CO Sensor Dilution: an automatic device protects the CO sensor in the presence of high CO levels. The measuring range will increase up to 10% CO.

Gas Velocity: Measure the gas speed using one Pitot tube connected to the differential pressure ports. Different tube lengths are available for different stack diameters. G-Line 4000 calculates the gas velocity considering the gas density parameter.

Type: palm-top combustion gas analyzer. G-Line 2000: 1 or 2 gas sensors, G-Line 4000: 1 to 4 sensors.

Calibration: automatic calibration procedure at instrument switch-On.

Self-Diagnosis: Sensors efficiency test with display diagnostic messages.

Fuel Types: Up to 10 selectable from keyboard.

Power Supply: High capacity rechargeable Li-Ion battery pack / external battery charger.

Charging Time: G-Line 2000: 8 hours at 90% with instrument Off. G-Line 4000: 3 hours at 90% with instrument Off.

Battery Life: G-Line 2000: 6 hours, G-Line 4000: 10 hours, (typical for both) continuous use (without printing and backlight).

Memory: up to 250 full analysis data structured by boilers (Tags).

Printer: Internal impact type 24 columns with 2.28 inch (58 mm) width paper roll.

Printer Power Supply: from the analyzer battery pack.

Print Autonomy: up to 40 reports with full battery (typical).

Printed Report Header: 4 programmable lines.

Service and User Information: 3 programmable lines.

Display: 1.57 x 2.28 in (40 x 58 mm) alpha-numeric LCD with backlight.

Gas Pump: 1.4 l/m @ 100 mbar

Flue Gas Probes: stainless steel shaft with incorporated temperature sensor.

Serial Communication: RS232 serial interface.

Infrared Port: compatible with HP82240B cordless printer.

Operating Temperature: 23° to 113°F (-5°C to +45°C)

Storage Temperature: -4° to 140°F (-20° to +60°C) 3 months maximum at temperatures exceeding the operational limits).

Dimensions and Weight: 4.13 x 2.95 x 11.41 in (105 x 75 x 290 mm) - 1.98 lbs (0.9 kg) with battery and printer.

ONE YEAR 1 WARRANTY

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G-Line Series Specifications

For Industrial or Commercial use in systems above 239,000 BTU's (70kW)

G-Line Series Specifications					
Parameter	**G-Line 2000 Sensor Type**	**G-Line 4000 Sensor Type**	**Range**	**Resolution**	**Accuracy/1year**
O_2	Electrochemical	Electrochemical	0 - 25%	0.1%	±0.1% Volume
CO H_2 < 2000 ppm compensated	Electrochemical	Electrochemical	0 - 8000 ppm	1 ppm	±10 ppm < 300 ppm ±4% up to 2000 ppm ±10% > 2000 ppm
CO	NA	Electrochemical	0 - 20000 ppm	1 ppm	±10 ppm < 300 ppm ±4% up to 2000 ppm ±10% > 2000 ppm
NO	NA	Electrochemical	0 - 4000 ppm	1 ppm	±5 ppm < 125 ppm ±4% up to 4000 ppm
LOW NO	NA	Electrochemical	0 - 500 ppm	0.1 ppm	± 2 ppm < 40 ppm ±5% up to 500 ppm
NO_2	NA	Electrochemical	0 - 1000 ppm	1 ppm	± 5 ppm <125 ppm ±4% up to 1000 ppm
LOW NO_2	NA	Electrochemical	0 - 100 ppm	0.1 ppm	± 2 ppm < 40 ppm ±5% up to 100 ppm
NOx	Calculated	Calculated	0 - 5000 ppm	1 ppm	
SO_2	NA	Electrochemical	0 - 4000 ppm	1 ppm	± 5 ppm <125 ppm ±4% up to 4000 ppm
CO_2	Calculated	Calculated	0 - 99.9%	0.1%	
CxHy	NA	Pellistor	0 - 5%	0.01%	±0.5% Full Scale
T air	Pt100	Pt100	-10 - 99.9°C	0.1°C	±0.2% rdg + 0.15°C
T gas	TC K	TC K	0 - 999.9°C	0.1°C	±0.3% rdg + 0.3°C
ΔT	Calculated	Calculated	0 - 999.9°C	0.1°C	
T flow	NA	TC K	-10 - 99.9°C	0.1°C	±0.3% rdg + 0.3°C
T return	NA	Pt100	-10 - 99.9°C	0.1°C	±0.2% rdg + 0.15°C
Pressure/Draft	Pont	Bridge	±100.00 hPa	1 hPa	±3Pa < 300Pa ±1% rdg > 300Pa
Excess Air	Calculated	Calculated	1.00 - Infinity	0.01%	
Gas Velocity	NA	Calculated	0 - 99.9 m/s	0.1 m/s	
Efficiency	Calculated	Calculated	1 - 99.9%	0.1%	
Smoke Index	Paper Filter Method	Paper Filter Method	0 - 9 Bacharach		

- Relative Accuracy limits are stated as absolute or % of reading with reference to the ambient temperature range from -5°C to 40°C. Additional ± 1 digit error has to be considered.
- All emissions measurements are also available with a programmable O_2 reference value.
- NOx concentration can be shown in terms of stack equivalent NO_2
- Accuracy limits are stated as % of reading. Additional ±1 digit error has to be considered.
- The pressure relative accuracy shown is valid only after the autozero procedure.
- Measuring readings can be directly converted from ppm to mg/Nm^3, mg/kWh, from hPa to mmH2O, mbar, inH2O and from °C to °F.

Specifications subject to change without notice

Applications

- Boiler, Burner, Engine and Furnace Tuning and Maintenance
- Draft, Gauge and Differential Pressure Measurements
- Search for Presence and Location of Gas Leaks
- Operator Safety with Ambient CO and O_2 Continuous Monitoring

DBGas 2004 - Gas Analysis Database Manager
G-Line series analyzers can store 250 readings structured by boilers. Using the optional DBGas 2004 Windows software package, you can organize and manage your inspection and maintenance activity. Select your boiler details from PC and download to your unit.
DBGas 2004 software package includes GasConfig Windows software. With this software you can modify the configuration of the instrument.

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Complete Calibration Services Available

(800) 421-2853 • FAX (828) 658-0728 • www.palmerwahl.com

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ISO9001:2008 CERTIFIED

G-Line Series Accessories

G-Line Series Accessories	
Transport Cases & Protection	
BB880028	ABS Rigid Carrying Case
BB880043	Vinyl Carrying Case with Shoulder Strap
EE880047	Rubber Holster with Magnetic Support
Probes & Sensors	
BB610046	300mm Sampling Dual Hose Probe (Gas and Draft) Max 800°C
BB610080	750mm Sampling Dual Hose Probe (Gas and Draft) Max 800°C
BB830009	Ambient CO Probe
BB830010	Gas Leak Detector Probe (Sniffer)
BB830018	PT100 Remote Air Sensor, 2m Cable and Positioning Cone
BB830025	External Probe for Natural Boiler Draft (200Pa)
BB610032	Pitot Tube 300mm*
BB610033	Pitot Tube 800mm*
BB610034	Pitot Tube 1000mm*
F2132100	130mm Air TC Type K Probe
F2137100	130mm Contact TC Type K Probe
F2139000	Pipe Velcro TC Type K Probe
F2139100	TC Type K Clamp Temperature Probe
F2139200	Pt100 Clamp Temperature Probe
BB610057	3m Extension for Dual Hose Sample Probe + TC
BB610103	6m Extension for Dual Hose Sample Probe + TC
Test Tools & Miscellaneous	
EE300088	Single Hose Pressure Probe and Burner Hose Kit
2XEE300088	Double Hose Kit for Differential Pressure Measurement
EE300248	Leak Test Kit (Pump + Hose + Adaptors)
EE620054	Rechargeable Li-ION Battery Pack
F7828000	Manual Pump for Smoke Index Measurement + 40 Filters + Table
Software & Connectors	
BB260166	DBGas 2004 Standard Software
BB260224	DBGas 2004 Standard Upgrade
EE700476	USB Adaptor Cable
Printer Accessories	
EE340005	Printer Paper Roll 10/pkg for G-Line 4000
EE340006	Printer Paper Roll 10/pkg for G-Line 2000
EE490002	Printer Ribbon 3/pkg
EE650011	Soot Filter (40 pieces/pkg)
EE650074	Filter Cartridge for EE650076/EE650082 Water Trap 10/pkg

* G-Line 4000 only

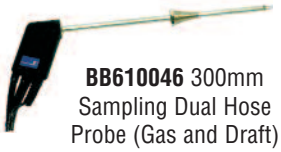
BB880028 ABS Rigid Carrying Case

BB880043 Vinyl Carrying Case with Shoulder Strap

BB830009 Ambient CO Probe

BB830010 Gas Leak Detector Probe (Sniffer)

BB830018 PT100 Remote Air Sensor, 2m Cable and Positioning Cone



BB610046 300mm Sampling Dual Hose Probe (Gas and Draft) Max 800°C

F2132100 130mm Air TC Type K Probe

BB830025 External Probe for Natural Boiler Draft (200Pa)

F2139000 Pipe Velcro TC Type K Probe

F2137100 130mm Contact TC Type K Probe

F2139200 Pt100 Clamp Temperature Probe

F2139100 TC Type K Clamp Temperature Probe

F7828000 Manual Pump for Smoke Index Measurement

EE300248 Leak Test Kit (Pump + Hose + Adaptors)

EE650011 Soot Filter (40 pieces/pkg)

EE700476 USB Adaptor Cable

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